

DEPARTMENT OF THE INTERIOR

FRANKLIN K. LANE, Secretary

UNITED STATES GEOLOGICAL SURVEY

GEORGE OTIS SMITH, Director

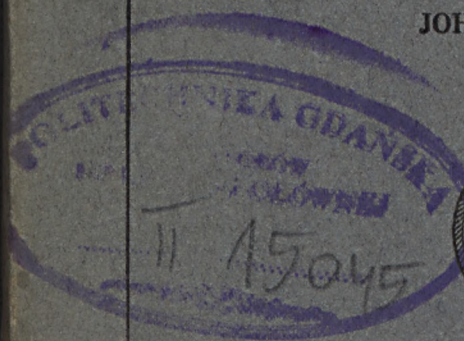
BULLETIN 684

BIBLIOGRAPHY
OF
NORTH AMERICAN GEOLOGY
FOR
1917

WITH SUBJECT INDEX

BY

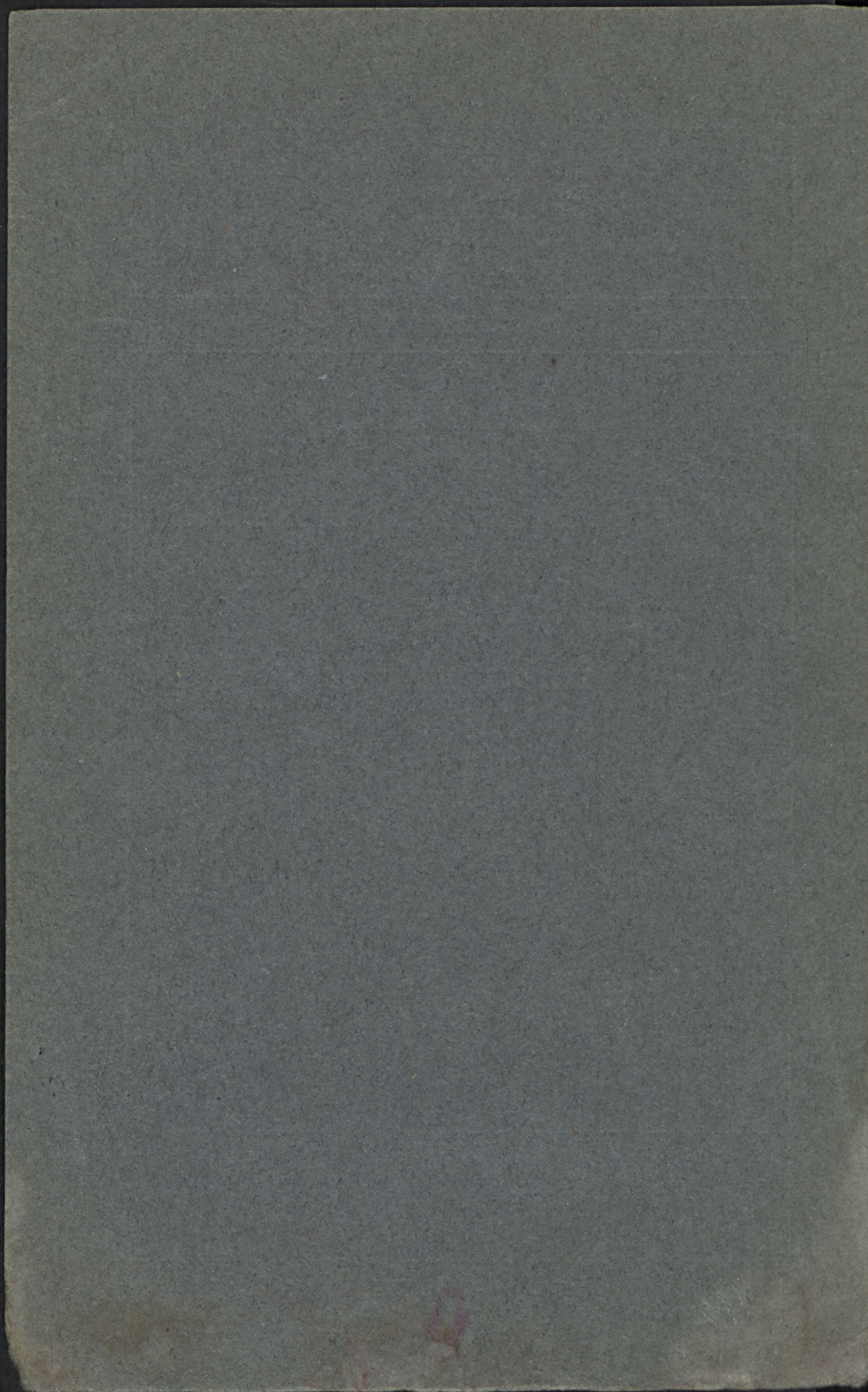
JOHN M. NICKLES



WASHINGTON

GOVERNMENT PRINTING OFFICE

1918



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Data.....
Data.....

BIBLIOGRAPHY OF NORTH AMERICAN GEOLOGY FOR 1917, WITH SUBJECT INDEX.

By JOHN M. NICKLES.



INTRODUCTION.

The bibliography of North American geology, including paleontology, petrology, and mineralogy, for the year 1917 follows the plan and arrangement of its immediate predecessors. It includes publications bearing on the geology of the Continent of North America and adjoining islands; also Panama and the Hawaiian Islands. Papers by American writers on the geology of other parts of the world are not included. Textbooks and papers general in character by American authors are included; those by foreign authors are excluded unless they appear in American publications.

As heretofore, the papers, with full title and medium of publication and explanatory note when the title is not fully self-explanatory, are listed under the authors, arranged in alphabetic order. The author list is followed by an index to the literature listed. In this index the entries in one alphabet are of three kinds—first, subject, with various subdivisions, to enable the specialist to ascertain readily all the papers bearing on a particular subject or area; second, titles of papers, many of them abbreviated or inverted, under their leading words; and third, cross references, which have been freely used to avoid too much repetition. The subjects have been printed in black-faced type, the titles of papers and cross references in ordinary type. As it may not be always obvious which subject headings have been adopted, an outline of those used immediately precedes the index.

The bibliography of North American geology is comprised in the following bulletins of the United States Geological Survey: No. 127 (1732-1892); Nos. 188 and 189 (1892-1900); No. 301 (1901-1905); No. 372 (1906-7); No. 409 (1908); No. 444 (1909); No. 495 (1910); No. 524 (1911); No. 545 (1912); No. 584 (1913); No. 617 (1914); No. 645 (1915); No. 665 (1916); and No. 684 (1917).

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By JOHN H. WARD

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OUTLINE OF SUBJECT HEADINGS.

In the following index the subject headings are printed in black-faced type. An outline of these is here given that it may be quickly seen which subject heading of two or more synonyms has been adopted. Thus "petroleum" and not "oil" nor "rock oil" has been chosen. That the specialist may see at a glance under what headings to find cognate literature, subject headings that are more or less closely related have been grouped together under the following heads: Areal or regional, general, economic, dynamic and structural, physiographic, stratigraphic or historical, paleontology, petrology, mineralogy, underground water. In the index the specific entries under the areal or regional subject headings are alphabetized under these same heads arranged in the same order, namely, general, economic, etc.

AREAL OR REGIONAL.

The States and Territories of the Union, Alabama, Alaska, etc.; The Provinces of Canada, Alberta, etc.; Greenland; Arctic regions; Mexico; the countries of Central America; the West Indies, and the single islands; the Hawaiian Islands.

GENERAL.

Associations, meetings; Addresses; Philosophy; History; Biography; Bibliography; Education; Textbooks.

Surveys; Fieldwork; Excursions; Technique; Cartography.

Classification; Nomenclature.

Geochemistry; Chemical analyses (list); Geophysics; Atmosphere; Radioactivity.

Experimental investigations; Borings; Miscellaneous.

ECONOMIC.

Ore deposits, origin; Contact phenomena.

Gold; Placers; Black sands; Silver; Quicksilver; Nickel; Cobalt; Copper; Lead; Zinc; Iron; Magnetite; Manganese; Tin.

Aluminum; Bauxite; Antimony; Bismuth; Tungsten; Vanadium; Uranium; Carnotite ores; Molybdenum; Chromic iron ore.

Platinum; Palladium; Titanium; Rutile; Rare earths; Monazite; Zircon.

Coal; Anthracite; Lignite; Peat.

Petroleum; Natural gas; Oil shales; Asphalt; Albertite; Gilsonite; Bituminous rock.

Stone; Building stone; Granite; Trap; Bluestone; Limestone; Marble; Lime; Gypsum.

Sand; Glass sand; Silica; Quartz; Quartzite; Sandstone; Gravel; Cement and cement materials; Concrete materials; Road materials.

Clay; Kaolin; Bentonite; Fire clay; Gault; Slate; Shale; Pyrophyllite, Serpentine; Asbestos; Steatite; Soapstone; Talc.

Precious stones; Diamonds; Sapphires; Turquoise; Tourmaline; Onyx.

Abrasive materials; Corundum; Emery; Garnet; Diatomaceous earth; Tripoli; Volcanic ash; Pumice; Millstones; Whetstones; Novaculite; Feldspar. Phosphate; Apatite; Potash; Alunite; Nitrate; Glauconite; Marl. Salt; Salines; Bromine; Calcium chloride; Borax; Fluorspar. Barite; Strontium; Mineral paints. Arsenic; Fuller's earth; Infusorial earth; Magnesite; Mica; Graphite. Phosphorus; Sulphur; Pyrite. Soils.

DYNAMIC AND STRUCTURAL.

Earth, Genesis of; Earth, age of; Earth, interior of; Earth, temperature of. Volcanism; Volcanoes; Earthquakes; Seismology; Seismographs; Mud volcanoes.

Isostasy; Orogeny; Changes of level.

Magmas; Magmatic differentiation; Laccoliths; Intrusions; Dikes; Contact phenomena.

Deformation; Folding; Faulting; Unconformities.

Conglomerates; Concretions; Stalactites; Jointing; Cleavage.

Denudation; Erosion; Coast changes; Coral islands and reefs; Weathering; Caves; Sink holes; Wind work; Dunes; Loess; Landslides.

Glaciers; Glacial erosion; Glacial striæ; Potholes; Kettle holes.

Sedimentation; Eskers; Kames; Moraines.

Drainage changes.

PHYSIOGRAPHIC.

Geomorphy; Relief maps.

Plains; Prairies; Peneplains; Valleys; Cirques; Deserts; Alluvial fans; Deltas; Mounds, natural; Sink holes; Karsts; Natural bridges.

Rivers; Stream piracy; Meanders; Falls; Lakes; Swamps; Marshes; Everglades.

Terraces; Beaches; Shore lines.

STRATIGRAPHIC OR HISTORICAL.

Geologic history; Geologic time; Paleogeography; Paleogeographic maps; Paleoclimatology.

Geologic maps; Geologic formations described (list); Tables of formations; Unconformities; Borings.

Pre-Cambrian; Paleozoic (undifferentiated); Cambrian; Ordovician; Silurian; Devonian; Carboniferous; Mesozoic (undifferentiated); Triassic; Jurassic; Cretaceous; Tertiary; Quaternary; Recent.

Glacial geology; Glaciation; Drift deposits; Glacial lakes; Erratic boulders; Ice ages (ancient).

PALEONTOLOGY.

Geographic distribution; Evolution; Restorations.

Vertebrata; Man. fossil; Mammalia; Aves; Reptilia; Amphibia; Pisces; Footprints.

Invertebrata; Arthropoda; Crustacea; Trilobita; Ostracoda; Insecta; Arachnida; Myriapoda.

Mollusca; Cephalopoda; Gastropoda; Pelecypoda.

Molluscoidea; Brachiopoda; Bryozoa; Vermes.

Echinodermata; Echinoidea; Asteroidea; Crinoidea; Cystoidea.

Cœlenterata; Anthozoa; Hydrozoa; Graptolites.

Protozoa; Spongida; Foraminifera.
Paleobotany; Diatoms; Algæ.
Problematica.

PETROLOGY.

Rocks, origin; Rocks, structural features; Rocks described (list); Igneous and volcanic rocks; Rock-forming minerals; Lava; Oolite; Dolomite; Pebbles.

MINERALOGY.

Minerals described (list); Crystallography; Pseudomorphism; Paragenesis of minerals; Rock-forming minerals; Meteorites.

UNDERGROUND WATER.

Mineral waters; Thermal waters; Geysers; Springs; Mine waters.

The first part of the report deals with the general progress of the work during the year. It is divided into two main sections, the first of which deals with the work done in the laboratory and the second with the work done in the field. The first section is divided into three parts, the first of which deals with the work done in the laboratory during the year, the second with the work done in the laboratory during the year, and the third with the work done in the laboratory during the year.

The second part of the report deals with the work done in the field during the year. It is divided into two main sections, the first of which deals with the work done in the field during the year, and the second with the work done in the field during the year. The first section is divided into three parts, the first of which deals with the work done in the field during the year, the second with the work done in the field during the year, and the third with the work done in the field during the year.

The third part of the report deals with the work done in the laboratory during the year. It is divided into two main sections, the first of which deals with the work done in the laboratory during the year, and the second with the work done in the laboratory during the year. The first section is divided into three parts, the first of which deals with the work done in the laboratory during the year, the second with the work done in the laboratory during the year, and the third with the work done in the laboratory during the year.

The fourth part of the report deals with the work done in the field during the year. It is divided into two main sections, the first of which deals with the work done in the field during the year, and the second with the work done in the field during the year. The first section is divided into three parts, the first of which deals with the work done in the field during the year, the second with the work done in the field during the year, and the third with the work done in the field during the year.

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- Aaron slate, Ordovician (?), Virginia, North Carolina: Laney, 608.
- Abbeyville gabbro, Virginia, North Carolina: Laney, 608.
- Abilene limestone, Permian, Texas: Wrather, 1174.
- Admiralty till, Pleistocene, British Columbia: Clapp, 193.
- Agawa formation, pre-Cambrian, Minnesota: Broderick, 119.
- Akron dolomite, Silurian, Ontario: Chadwick, 183.
- Aldridge conglomerate, pre-Cambrian, British Columbia: Drysdale, 303.
- Alger stage, Silurian, Kentucky: Miller, 727.
- Allegheny formation, Pennsylvanian, Ohio: Stout, 1008.
- Allegheny series, Pennsylvanian, West Virginia: Hennen, 451.
- Allensville member, Mississippian, Ohio: Stout, 1008.
- Allensville substage, Mississippian, Kentucky: Miller.
- Allentown limestone, Cambrian, Pennsylvania: Miller, 727, 728.
- Allison formation, Cretaceous, British Columbia: Rose, 880.
- Alpena limestone, Devonian, Michigan: Smith, 967.
- Alta shale, Cambrian, Utah: Tomlinson, 1027.
- Alum Bluff formation, Miocene, Florida: Sellards, 919.
- Alum Bluff formation, Tertiary, Georgia: Shearer, 936.
- Ames limestone, Pennsylvanian, Ohio: Stout, 1008.
- Ames limestone and shale, Pennsylvanian, West Virginia: Hennen, 451.
- Amherst schist, Carboniferous, Massachusetts: Emerson, 321.
- Amsden formation, Carboniferous, Wyoming: Hewett and Lupton, 461.
- Amsterdam limestone, Ordovician, New York: Coryell, 237.
- Anastasia formation, Pleistocene, Florida: Chamberlin, 186.
- Anderdon limestone, Silurian, Michigan: Smith, 967.
- Annabelle shale, Pennsylvanian, West Virginia: Hennen, 451.
- Antrim shale, Mississippian, Michigan: Sherzer, 917.
- Anvil Rock substage, Pennsylvanian, Kentucky: Miller, 727.
- Apalachicola group, Tertiary, Georgia: Shearer, 936.
- Aqua formation, Tertiary (Eocene), Maryland: Miller *et al.*, 730.
- Arcturus limestone, Pennsylvanian, Nevada: Spencer, 975.
- Arkadelphia clay, Cretaceous, Louisiana: Matson and Hopkins, 696.
- Arkansas novaculite, Devonian, Arkansas: Miser, 737.
- Arkona beds, Devonian, Ontario: Grabau, 393.
- Arnhem substage, Ordovician, Kentucky: Miller, 727.
- Arnoldsburg sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Arundel formation, Cretaceous, Maryland: Miller *et al.*, 730.
- Aspermont dolomite, Permian, Texas: Wrather, 1174.
- Astoria series, Oligocene, California: Clarke, 204.
- Athabasca series, pre-Cambrian, Saskatchewan: Alcock, 9.
- Athens shale, Ordovician, Virginia and Tennessee: Raymond, 833.
- Atoka formation, Carboniferous, Arkansas: Miser, 737.
- Aurora sandstone, Mississippian, Ohio: Verwiebe, 1066.
- Austin chalk, Cretaceous, Texas: Hopkins, 486; Matson and Hopkins, 697; Udden and Bybee, 1050.
- Ayer granite, Carboniferous (or later), Massachusetts: Emerson, 321.
- Bad River limestone, Algonkian, Michigan: Smith, 967.
- Baltimore gneiss, pre-Cambrian, Maryland: Miller *et al.*, 730.
- Barnwell formation, Tertiary, Georgia: Shearer, 936.
- Bass Islands dolomite, Silurian, Michigan: Sherzer, 917.
- Bass Island series, Silurian, Michigan: Smith, 967.
- Bayport (Maxville) limestone, Mississippian, Michigan: Smith, 967.
- Bearpaw formation, Cretaceous, Montana: Thom, 1020.
- Bearpaw shale, Cretaceous, Alberta: Dowing, 296.
- Bearpaw shale, Cretaceous, Montana: Collier, 223; Hares, 424; Stebinger, 984; Woolsey *et al.*, 1173.
- Beattyville substage, Pennsylvanian, Kentucky: Miller, 727.
- Becket granite gneiss, Archean, Massachusetts: Emerson, 321.
- Becraft limestone, Devonian, Pennsylvania: Reeside, 841.
- Bedford formation, Mississippian, Ohio: Stout, 1008.
- Bedford shale, Devonian or Carbonaceous, Ohio: Rogers, 875.
- Bedford shales, Devonian, Ohio: Verwiebe, 1067.
- Bedford substage, Mississippian, Kentucky: Miller, 727.
- Beekmantown formation, Ordovician, Michigan: Smith, 967.
- Beekmantown limestone, Ordovician, Pennsylvania: Miller, 728.

- Beekmantown limestone, Ordovician, Vermont: Perkins, 794.
- Belchertown tonalite, Carboniferous, Massachusetts: Emerson, 321.
- Bellevue substage, Ordovician, Kentucky: Miller, 727.
- Bellingham conglomerate, Carboniferous, Massachusetts and Rhode Island: Emerson, 321.
- Bellowspipe limestone, Ordovician, Massachusetts: Emerson, 321.
- Belly River series, Cretaceous, Alberta: Dowling, 296.
- Bennett quartzite, pre-Cambrian, Quebec: Knox, 596.
- Benson conglomerate, Cretaceous, British Columbia: Clapp, 193.
- Benson formation, Ordovician, Kentucky: Raymond, 833.
- Benton formation, Cretaceous, British Columbia: Rose, 880.
- Benton formations, Cretaceous, Wyoming: Ziegler, 1189.
- Benton shale, Cretaceous, North Dakota: Leonard, 633.
- Berea formation, Mississippian, Ohio: Stout, 1008.
- Berea formation, Mississippian, Pennsylvania: Verwiebe, 1066.
- Berea sandstone, Mississippian, Michigan: Sherzer, 917.
- Berea sandstone, Mississippian, Ohio: Rogers, 875.
- Berea substage, Mississippian, Kentucky: Miller, 727.
- Berkshire schist, Ordovician, Massachusetts: Emerson, 321.
- Bernardston formation, Devonian, Massachusetts: Emerson, 321.
- Berne substage, Mississippian, Kentucky: Miller, 727.
- Berwick gneiss, pre-Carboniferous, Maine, New Hampshire: Katz, 546.
- Bessemer granite, pre-Cambrian, North and South Carolina: Keith and Sterrett, 558.
- Bethel substage, Mississippian, Kentucky: Miller, 727.
- Beverly syenite, Carboniferous, Massachusetts: Emerson, 321.
- Biddeford granite, post-Carboniferous, New Hampshire and Maine: Katz, 546.
- Bigby (?) limestone, Ordovician, Kentucky: Phalen, 799.
- Bigby substage, Ordovician, Kentucky: Miller, 727.
- Bigfork chert, Ordovician, Arkansas: Miser, 737.
- Bighorn dolomite, Ordovician, Wyoming and Montana: Tomlinson, 1027.
- Bingen sand, Cretaceous, Arkansas: Berry, 69.
- Birch Creek schist, pre-Ordovician, Alaska: Capps, 174.
- Birdsville stage, Mississippian, Kentucky: Miller, 727.
- Birmingham moraine, Quaternary, Michigan: Sherzer, 917.
- Birmingham shale, Pennsylvanian, West Virginia: Hennen, 451.
- Bisher member, Silurian, Ohio: Foerste, 350.
- Black Hand substage, Mississippian, Kentucky: Miller, 727.
- Black River formation, Ordovician, New York: Coryell, 237.
- Black River limestone, Ordovician, Vermont: Perkins, 794.
- Blairmore formation, Cretaceous, British Columbia: Rose, 880.
- Blakely sandstone, Ordovician, Arkansas: Miser, 737.
- Blaylock sandstone, Silurian, Arkansas: Miser, 737.
- Bliss sandstone, Cambrian, New Mexico: Darton, 257, 258.
- Blowout Mountain sandstone, Permian, Texas: Wrather, 1174.
- Blue Hill granite porphyry, Carboniferous, Massachusetts: Emerson, 321.
- "Bolton" gneiss, Carboniferous, Massachusetts: Emerson, 321.
- Bonanza latite, Colorado: Patton, 787.
- Bonne Terre dolomite, Cambrian, Missouri: Buehler, 137.
- Boone formation, Mississippian, Missouri: Buehler, 137.
- Bowden beds, Miocene, Mexico and Central America: Dickerson, 281.
- Boylston schist, Carboniferous, Massachusetts: Emerson, 321.
- Bradfordian series, Devonian, Pennsylvania: Verwiebe, 1067.
- Braintree slate, Cambrian, Massachusetts: Emerson, 321.
- Brandywine formation, Tertiary (Pliocene), Maryland: Miller *et al.*, 730.
- Brannon cherty member, Ordovician, Kentucky: Phalen, 799.
- Brassfield substage, Silurian, Kentucky: Miller, 727.
- Breathitt stage, Pennsylvanian, Kentucky: Miller, 727.
- Brecksville formation, Mississippian, Ohio: Verwiebe, 1066.
- Bridgeton formation, Quaternary, New Jersey: Salisbury and Knapp, 890.
- Brimfield schist, Carboniferous, Massachusetts: Emerson, 321.
- Broncho Mountain granite, Colorado: Crawford and Worcester, 238.
- Brookline conglomerate member, Carboniferous, Massachusetts: Emerson, 321.
- Brownstown sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Bruce conglomerate, pre-Cambrian, Ontario: Quirke, 827.
- Bruce limestone, pre-Cambrian, Ontario: Quirke, 827.
- Bruce series, pre-Cambrian, Ontario: Quirke, 827.
- Brunswick conglomerate, Triassic, Pennsylvania: Jonas, 537; Miller, 728.

- Brunswick shale, Triassic, Pennsylvania : Jonas, 537; Miller, 728.
- Brush Creek limestone, Pennsylvanian, Ohio : Stout, 1008.
- Brush Creek limestone and shale, Pennsylvanian, West Virginia : Hennen, 451.
- Buckingham series, pre-Cambrian, Quebec : Wilson, 1153, 1154.
- Buena Vista member, Mississippian, Ohio : Stout, 1008.
- Buffalo cement bed, Silurian, New York : Chadwick, 183.
- Buffalo granite, Virginia : Laney, 608.
- Buffalo sandstone, Pennsylvanian, West Virginia : Hennen, 451.
- Buffalo Hill sandstones, Permian, Texas : Wrather, 1174.
- Bulkley intrusives, Tertiary (?), British Columbia : Dolmage, 292.
- Bull Lake Creek formation, Cambrian, Wyoming : Branson, 112.
- Bullwagon dolomite, Permian, Texas : Wrather, 1174.
- Burgoon formation, Mississippian, Pennsylvania : Verwiebe, 1066.
- Byer member, Mississippian, Ohio : Stout, 1008.
- Byer substage, Mississippian, Kentucky : Miller, 727.
- Calaveras formation, Carboniferous, California : Moody, 742.
- Calvert formation, Tertiary (Miocene), Maryland : Miller *et al.*, 730.
- Cambridge limestone, Pennsylvanian, Ohio : Stout, 1008.
- Cambridge slate, Carboniferous, Massachusetts : Emerson, 321.
- Camden chert, Devonian, Tennessee : Dunbar, 306.
- Campbell Creek limestone, Pennsylvanian, West Virginia : Hennen, 451.
- Camp Nelson substage, Ordovician, Kentucky : Miller, 727.
- Canajoharie shale, Ordovician, New York : Raymond, 833.
- Cantwell formation, Tertiary, Alaska : Capps, 174.
- Cape Elizabeth formation, Carboniferous, Maine : Katz, 546.
- Cape May formation, Quaternary, New Jersey : Salisbury and Knapp, 890.
- Carbondale formation, Pennsylvanian, Illinois : Brokaw, 121; Cady, 151; Hinds, 469, 470; St. Clair, 886.
- Carlile shale, Cretaceous, Wyoming : Hares, 424.
- Carmelo series, Cretaceous, California : Hawley, 431.
- Carolina gneiss, Archean, North and South Carolina : Keith and Sterrett, 558.
- Carrizo formation, Tertiary, California : Vaughan, 1064.
- Casco Bay group, Carboniferous, Maine : Katz, 546.
- Caseyville substage, Pennsylvanian, Kentucky : Miller, 727.
- Cassville plant shale, Permo-Carboniferous, West Virginia : Hennen, 451.
- Castle formation, Permian (?), Texas : Porch, 811.
- Catahoula sandstone, Oligocene, Alabama : Hopkins, 488.
- Catahoula sandstone, Oligocene, Louisiana : Matson, 695.
- Cathedral formation, Cambrian, British Columbia : Walcott, 1078, 1079.
- Catskill, Devonian, New York : Verwiebe, 1067.
- Cedar District formation, Cretaceous, British Columbia : Clapp, 193.
- Cedar Grove (Upper) sandstone, Pennsylvanian, West Virginia : Hennen, 451.
- Cedarville dolomite, Silurian, Ohio : Foerste, 350.
- Cedarville sandstone, Pennsylvanian, West Virginia : Hennen, 451.
- Chagrin shale, Devonian, Ohio : Rogers, 875.
- Chagrin shales, Devonian, Ohio : Verwiebe, 1067.
- Chainman shale, Mississippian, Nevada : Spencer, 975.
- Chanute shale, Pennsylvanian, Missouri : Hinds and Greene, 471.
- Chattahoochee formation, Oligocene, Florida : Sellards, 919.
- Chattahoochee formation, Tertiary, Georgia : Shearer, 936.
- Chattanooga shale, Mississippian, Tennessee : Dunbar, 306.
- Chazy limestone, Ordovician, Vermont : Perkins, 794.
- Cherokee shale, Pennsylvanian, Missouri : Hinds and Greene, 471.
- Cherryvale shale, Pennsylvanian, Missouri : Hinds and Greene, 471.
- Chesapeake group, Tertiary (Miocene), Maryland : Miller *et al.*, 730.
- Cheshire quartzite, Cambrian, Massachusetts : Emerson, 321.
- Chester amphibolite, Ordovician, Massachusetts : Emerson, 321.
- Chester group, Mississippian, Illinois : St. Clair, 886.
- Chico, Cretaceous, California : Clark, 197.
- Chico formation, Cretaceous, California : Waring, 1088.
- Chicopee shale, Triassic, Massachusetts : Emerson, 321.
- Chinle formation, Triassic, Arizona, Utah, and New Mexico : Gregory, 402.
- Choctawhatchee formation, Miocene, Florida : Sellards, 919.
- Chugwater formation, Permo-Carboniferous, Wyoming : Knight, 589.
- Chugwater formation, Triassic, Wyoming : Hewett and Lupton, 461.
- Chuska sandstone, Tertiary, New Mexico and Arizona : Gregory, 402.
- Citronelle formation, Pliocene, Alabama : Hopkins, 488.

- Citronelle formation, Pliocene, Louisiana : Matson, 695.
- Claggett formation, Cretaceous, Montana : Thom, 1020.
- Claggett shale, Cretaceous, Montana : Collier, 223; Hares, 424.
- Claiborne beds, Tertiary, Georgia : Shearer, 936.
- Claiborne group, Eocene, Alabama : Hopkins, 488.
- Claiborne group, Eocene, Louisiana : Matson, 695.
- Clallam formation, Oligocene, Washington : Clarke, 204.
- Clarion member, Pennsylvanian, Ohio : Stout, 1008.
- Clarksburg limestone, Pennsylvanian, West Virginia : Hennen, 451.
- Clear Fork beds, Permian, Texas : Wrather, 1174.
- Clearwater formation, Cretaceous, Alberta : McLearn, 676.
- Cleveland shale, Devonian, Ohio : Rogers, 875.
- Cleveland shales, Devonian, Ohio : Verwiebe, 1067.
- "Clinton" formation, Silurian, Ohio : Rogers, 875.
- Clore formation, Mississippian, Illinois : St. Clair, 886.
- Clore substage, Mississippian, Kentucky : Miller, 727.
- Cloverly formation, Cretaceous, Wyoming : Ziegler, 1189, 1190.
- Cloverly formation, Cretaceous (?), Wyoming : Hewitt and Lupton, 461.
- Coalburg sandstone, Pennsylvanian, West Virginia : Hennen, 451.
- Coalburg (Lower) sandstone, Pennsylvanian, West Virginia : Hennen, 451.
- Cobalt series, pre-Cambrian, Ontario : Collins, 224; Quirke, 827.
- Cockeysville marble, Cambrian (?), Maryland : Miller *et al.*, 730.
- Cody formation, Cretaceous, Wyoming : Ziegler, 1189.
- Cody shale, Cretaceous, Wyoming : Ziegler, 1190.
- Cody shale, Cretaceous (?), Wyoming, Hewitt and Lupton, 461.
- Coeymans limestone, Devonian, Pennsylvania : Reeside, 841.
- Coldwater shale, Mississippian, Michigan : Sherzer, 917.
- Coles Brook limestone, Archean, Massachusetts : Emerson, 321.
- Collier shale, Cambrian, Arkansas : Miser, 737.
- Collingwood formation, Ordovician, Ontario : Raymond, 833.
- Colorado group, Cretaceous, Alberta : Downing, 296.
- Colorado group, Cretaceous, Montana : Collier, 223.
- Colorado shale, Cretaceous, Montana : Hares, 424; Stebinger, 984.
- Colorado shale, Cretaceous, New Mexico : Darton, 257.
- Colquitz gneiss, Jurassic, British Columbia : Clapp, 193.
- Columbia formation, Quaternary, New Jersey : Salisbury and Knapp, 890.
- Columbia group, Quaternary (Pleistocene), Maryland : Miller *et al.*, 730.
- Columbia substage, Quaternary, Kentucky : Miller, 727.
- Columbus limestone, Devonian, Ohio : Rogers, 875.
- Columbus substage, Devonian, Kentucky : Miller, 727.
- Colwood sands and gravels, Pleistocene, British Columbia : Clapp, 193.
- Comanche series, Cretaceous, Texas : Matson and Hopkins, 697.
- Comanche series, Lower Cretaceous, Louisiana : Matson and Hopkins, 696.
- Comanche system, Wyoming : Ziegler, 1189.
- Comanche Peak, Cretaceous, Texas : Wrather, 1174.
- Conemaugh formation, Pennsylvanian, Ohio : Stout, 1008.
- Conemaugh series, Pennsylvanian, West Virginia : Hennen, 451.
- Conewango formation, Devonian, Pennsylvania : Verwiebe, 1067.
- Connellsville sandstone, Pennsylvanian, West Virginia : Hennen, 451.
- Conway schist, Silurian (?), Massachusetts : Emerson, 321.
- Conway schist, Triassic, Massachusetts : Emerson, 321.
- Coon Creek horizon, Cretaceous, Tennessee : Wade, 1072.
- Corbin substage, Pennsylvanian, Kentucky : Miller, 727.
- Corry sandstone, Mississippian, Pennsylvania : Verwiebe, 1066.
- Corryville substage, Ordovician, Kentucky : Miller, 727.
- Coys Hill granite, Carboniferous (or later), Massachusetts : Emerson, 321.
- Crab Orchard clay shale, Silurian, Ohio : Foerste, 350.
- Creston formation, pre-Cambrian, British Columbia : Drysdale, 303.
- Crowsnest volcanics, Cretaceous, British Columbia : Rose, 880.
- Crystal Mountain sandstone, Ordovician (?), Arkansas : Miser, 737.
- Curdsville formation, Ordovician, Kentucky : Raymond, 833.
- Curdsville substage, Ordovician, Kentucky : Miller, 727.
- Curlew substage, Pennsylvanian, Kentucky : Miller, 727.
- Cushing granodiorite, Carboniferous (?), Maine : Katz, 546.
- Cussewago sandstone, Mississippian, Pennsylvania : Verwiebe, 1066.
- Cussewago shale, Mississippian, Pennsylvania : Verwiebe, 1066.

- Cuyahoga formation, Mississippian, Ohio: Stout, 1008.
- Cuyahoga stage, Mississippian, Kentucky: Miller, 727.
- Cynthiana formation, Ordovician, Kentucky: Raymond, 833.
- Cynthiana stage, Ordovician, Kentucky: Miller, 727.
- Cypress formation, Mississippian, Illinois: St. Clair, 886.
- Cypress substage, Mississippian, Kentucky: Miller, 727.
- Cypress Creek chert, Devonian, Tennessee: Dunbar, 306.
- Dakota group, Cretaceous, Alberta: Dowing, 296.
- Dakota sandstone, Cretaceous, New Mexico, Arizona, and Utah: Gregory, 402.
- Dakota sandstone, Cretaceous, North Dakota: Leonard, 633.
- Dalton formation, Cambrian, Massachusetts: Emerson, 321.
- Dana diorite, Carboniferous (or later), Massachusetts: Emerson, 321.
- Davis shale, Cambrian, Missouri: Buehler, 137.
- Dayton limestone, Silurian, Ohio: Foerste, 350.
- Decatur limestone, Devonian, Tennessee: Dunbar, 306.
- De Chelly sandstone, Carboniferous (Permian?), Arizona: Gregory, 402.
- Decorah shale, Ordovician, Minnesota: Raymond, 833.
- Decota sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- De Courcy formation, Cretaceous, British Columbia: Clapp, 193.
- Dedham granodiorite, Devonian (?), Massachusetts: Emerson, 321.
- Deerfield sheet, Triassic (or later), Massachusetts: Emerson, 321.
- Defiance moraine, Quaternary, Michigan: Sherzer, 917.
- Delaware formation, Permo-Carboniferous, Texas: Porch, 811.
- Delaware limestone, Devonian, Ohio: Rogers, 875.
- Delaware substage, Devonian, Kentucky: Miller, 727.
- Derby formation, Cambrian, Missouri: Buehler, 137.
- Detroit interlobate moraine, Quaternary, Michigan: Sherzer, 917.
- Detroit River dolomite, Silurian, Michigan: Sherzer, 917.
- Detroit River series, Silurian, Michigan: Smith, 967.
- Dewey limestone, Pennsylvanian, Oklahoma: Fath, 333.
- Diamond Island slate, Carboniferous, Maine: Katz, 546.
- Dighton conglomerate, Carboniferous, Massachusetts: Emerson, 321.
- Doe Run formation, Cambrian, Missouri: Buehler, 137.
- Dorchester slate member, Carboniferous, Massachusetts: Emerson, 321.
- Double Mountain beds, Permian, Texas: Wrather, 1174.
- Douglas formation, Pennsylvanian, Missouri and Kansas: Hinds and Greene, 471.
- Drum limestone, Pennsylvanian, Missouri: Hinds and Greene, 471.
- Dry Creek shale, Cambrian, Montana: Walcott, 1079.
- Duluth gabbro, pre-Cambrian, Minnesota: Broderick, 119.
- Duncan formation, Cretaceous, British Columbia: Clapp, 193.
- Dundee limestone, Devonian, Michigan: Sherzer, 917.
- Dundee (Onondaga) limestone, Devonian, Michigan: Smith, 967.
- Dunderberg formation, Cambrian, Nevada: Walcott, 1078.
- Dunkard series, Permo-Carboniferous, West Virginia: Hennen, 451.
- Durbin formation, Silurian, Ohio: Foerste, 350.
- Eagle limestone and shale, Pennsylvanian, West Virginia: Hennen, 451.
- Eagle sandstone, Cretaceous, Montana: Collier, 223; Hares, 424; Thom, 1020.
- Eagle sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Eagle Ford shale, Cretaceous, Texas: Hopkins, 486; Matson and Hopkins, 697.
- Eagle Ford shales, Cretaceous, Texas: Udden and Bybee, 1050.
- Eagle Gulch latite, Colorado: Patton, 787.
- East Lynn sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- East Lynn (Upper) sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Eden shale, Ordovician, Kentucky: Shaw, 932.
- Eldorado formation, Cambrian, Nevada: Walcott, 1078.
- Elgin sandstone, Pennsylvanian, Oklahoma: Fath, 333.
- Elliot slate, Carboniferous, Maine and New Hampshire: Katz, 546.
- Elk Basin sandstone member of Eagle sandstone, Cretaceous, Wyoming: Hares, 424.
- Elk Lick limestone, Pennsylvanian, West Virginia: Hennen, 451.
- Ellis formation, Jurassic, Montana: Collier, 223; Pardee, 780.
- El Paso limestone, Ordovician, New Mexico: Darton, 257, 258.
- Ely greenstone, pre-Cambrian, Minnesota: Broderick, 119.
- Ely greenstones, pre-Cambrian, Ontario: Parsons, 784.
- Ely limestone, Pennsylvanian, Nevada: Spencer, 975.
- Embar formation, Carboniferous, Wyoming: Hewett and Lupton, 461.
- Emmet moraine, Quaternary, Michigan: Sherzer, 917.

- Engadine dolomite, Silurian, Michigan: Smith, 967.
- Erving hornblende schist, Carboniferous, Massachusetts: Emerson, 321.
- Espanola gravel, pre-Cambrian, Ontario: Quirke, 827.
- Espanola greywacke, pre-Cambrian, Ontario: Quirke, 827.
- Espanola limestone, pre-Cambrian, Ontario: Quirke, 827.
- Estill substage, Silurian, Kentucky: Miller, 727.
- Etchegoin formation, Pliocene, California: Gester, 372; Nomland, 757, 759.
- Etchegoin group, Pliocene, California: Nomland, 758.
- Euphemia dolomite, Silurian, Ohio: Foerste, 350.
- Eureka quartzite, Ordovician, Nevada: Spencer, 975; Tomlinson, 1027.
- Eutaw formation, Cretaceous, Alabama and Tennessee: Berry, 67.
- Eutaw formation, Cretaceous, Georgia: Shearer, 936.
- Eutaw formation, Cretaceous, Kentucky: Wade, 1073.
- Eutaw formation, Cretaceous, Mississippi: Stephenson, 989.
- Ewing limestone, Pennsylvanian, West Virginia: Hennen, 451.
- Exeter diorite, post-Carboniferous, New Hampshire: Katz, 546.
- Extension formation, Cretaceous, British Columbia: Clapp, 193.
- Fairhaven member, Tertiary (Miocene), Maryland: Miller *et al.*, 730.
- Fairmount substage, Ordovician, Kentucky: Miller, 727.
- Fairview shale, Ordovician, Colorado: Crawford and Worcester, 238.
- Falkirk dolomite, Silurian, New York: Chadwick, 183.
- Falmouth pegmatite, Maine: Katz, 546.
- Farley limestone bed, Pennsylvanian, Kansas and Missouri: Hinds and Greene, 471.
- Farnham formation, Ordovician, Quebec: Knox, 596.
- Fayette sandstone, Eocene, Louisiana: Matson, 695.
- Fernie formation, Jurassic, British Columbia: Rose, 880.
- Fiborn limestone, Silurian, Michigan: Smith, 967.
- Fish Haven dolomite, Ordovician, Utah: Tomlinson, 1027.
- Fish Haven (Lower) dolomite, Ordovician, Utah: Tomlinson, 1027.
- Fitchburg granite, Carboniferous, Massachusetts: Emerson, 321.
- Fitzwilliam granite, Carboniferous (or later), Massachusetts and New Hampshire: Emerson, 321.
- Flanagan formation, Ordovician, Kentucky: Raymond, 833.
- Flanagan limestone, Ordovician, Kentucky: Phalen, 799.
- Flathead quartzite, Cambrian, Montana: Pardee, 780.
- Flathead (?) sandstone, Cambrian, Montana: Walcott, 1079.
- Flaxville formation, Tertiary, Montana: Collier, 222.
- Foremost beds, Cretaceous, Alberta: Dowling, 296.
- Fort Mountain formation, Cambrian, Alberta: Walcott, 1078.
- Fort Union formation, Eocene, North Dakota: Leonard, 633.
- Fort Union formation, Tertiary, Montana: Woolsey *et al.*, 1173.
- Fort Union formation, Tertiary, Wyoming: Ziegler, 1190.
- Fort Union formation, Tertiary (?), Wyoming: Hewett and Lupton, 461.
- Fort Union formation, Wyoming: Wegemann, 1109.
- Fox Hills sandstone, Cretaceous, North Dakota: Leonard, 633.
- Franciscan formation, California: Smith, 962.
- Franciscan group, California: Clark, 197.
- Franklin limestone, pre-Cambrian, Pennsylvania: Jonas, 537.
- Fredonia substage, Mississippian, Kentucky: Miller, 727.
- Freeport (Lower), Pennsylvanian, Ohio: Stout, 1008.
- Freeport (Lower) limestone, Pennsylvanian, West Virginia: Hennen, 451.
- Freeport (Lower) sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Freeport (Upper) limestone, Pennsylvanian, West Virginia: Hennen, 451.
- Freeport (Upper) sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Frontier formation, Cretaceous, Wyoming: Hares, 424; Knowlton, 595; Ziegler, 1189.
- Frontier formation, Cretaceous (?), Wyoming: Hewett and Lupton, 461.
- Frontier sandstones, Cretaceous, Wyoming: Ziegler, 1190.
- Fulton shale, Ordovician, Ohio: Raymond, 833.
- Fulton (Utica) substage, Ordovician, Kentucky: Miller, 727.
- Fusselman limestone, Silurian, New Mexico: Darton, 257, 258.
- Gabriola formation, Cretaceous, British Columbia: Clapp, 193.
- Gallatin formation, Cambrian, Wyoming: Tomlinson, 1027.
- Ganges formation, Cretaceous, British Columbia: Clapp, 193.
- Garrard (Paint Lick) substage, Ordovician, Kentucky: Miller, 727.
- Gasper (Tribune) substage, Mississippian, Kentucky: Miller, 727.
- Gebo member, Cretaceous, Wyoming: Ziegler, 1189.
- Gebo sandstone, Cretaceous, Wyoming: Ziegler, 1190.

- Gilboy sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Girard shale, Devonian, Pennsylvania: Verwiebe, 1067.
- Glassboro phase, Quaternary, New Jersey: Salisbury and Knapp, 890.
- Glen Dean (Sloans Valley) substage, Mississippian, Kentucky: Miller, 727.
- Glendon limestone member, Oligocene, Alabama: Hopkins, 488.
- Glen Rose limestone, Texas: Shuler, 944.
- Glens Falls formation, Ordovician, New York: Raymond, 833.
- Gloucester formation, Ordovician, Ontario: Raymond, 833.
- Golconda formation, Mississippian, Illinois: St. Clair, 886.
- Golconda substage, Mississippian, Kentucky: Miller, 727.
- Gonic formation, Carboniferous, Maine and New Hampshire: Katz, 546.
- Goodridge formation, Pennsylvanian, Utah: Gregory, 402.
- Gordon formation, Cambrian, Montana: Walcott, 1079.
- Gordon shale, Cambrian, Montana: Walcott, 1078.
- Goshen schist, Ordovician (?), Virginia, North Carolina: Laney, 608.
- Goshen schist, Silurian (?), Massachusetts: Emerson, 321.
- Gosport sand, Eocene, Alabama: Hopkins, 488.
- Gowganda formation, pre-Cambrian, Ontario: Collins, 224; Quirk, 827.
- Grafton sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Granby tuff, Triassic, Massachusetts: Emerson, 321.
- Grand Falls chert, Mississippian, Missouri: Buehler, 137.
- Grand Rapids formation, Cretaceous, Alberta: McLearn, 676.
- Greendale substage, Ordovician, Kentucky: Miller, 727.
- Greer formation, Permian, Texas: Wrather, 1174.
- Grenville formation, pre-Cambrian, Quebec: Dresser, 298.
- Grenville series, pre-Cambrian, New York: Cushing, 245; Miller, 733; Newland, 753.
- Grenville series, pre-Cambrian, Quebec: Wilson, 1153; 1154.
- Greylock schist, Ordovician, Massachusetts: Emerson, 321.
- Grosse Isle moraine, Quaternary, Michigan: Sherzer, 917.
- Gulf series, Cretaceous, Texas: Matson and Hopkins, 697.
- Gulf series (Upper Cretaceous), Louisiana: Matson and Hopkins, 696.
- Gunflint formation, pre-Cambrian, Minnesota: Broderick, 119.
- Gym limestone, Carboniferous, New Mexico: Darton, 257.
- Hall series, Triassic (?), British Columbia: Drysdale, 302.
- Hampden diabase, Triassic (or later), Massachusetts: Emerson, 321.
- Hardinsburg formation, Mississippian, Illinois: St. Clair, 886.
- Hardinsburg substage, Mississippian, Kentucky: Miller, 727.
- Hardwick granite, Carboniferous (or later), Massachusetts: Emerson, 321.
- Hardyston quartzite, Cambrian, Pennsylvania: Miller, 728.
- Harrodsburg substage, Mississippian, Kentucky: Miller, 727.
- Haslam formation, Cretaceous, British Columbia: Clapp, 193.
- Hasmark formation, Cambrian, Montana: Pardee, 780.
- Hatchetigbee formation, Eocene, Alabama: Hopkins, 488.
- Hattiesburg clay, Oligocene, Louisiana: Matson, 695.
- Hawley schist, Ordovician, Massachusetts: Emerson, 321.
- Haydens Peak latite, Colorado: Patton, 787.
- Hazleton group, Jurassic and Triassic, British Columbia: Dolmage, 292.
- Hecla sandstone, Pennsylvanian, Ohio: Stout, 1008.
- Helderberg limestone, Devonian, Pennsylvania: Reeside, 841.
- Hendricks series, Silurian, Michigan: Smith, 967.
- Henley member, Mississippian, Ohio: Stout, 1008.
- Henrietta formation, Pennsylvanian, Missouri: Hinds and Greene, 471.
- Hermitage formation, Ordovician, Kentucky: Raymond, 833.
- Hermitage formation, Ordovician, Tennessee: Raymond, 833.
- Hermitage substage, Ordovician, Kentucky: Miller, 727.
- Heuvelton sandstone, Cambrian (Ozarkian), New York: Cushing, 245.
- Highbridge limestone, Ordovician, Kentucky: Shaw, 932.
- Highbridge stage, Ordovician, Kentucky: Miller, 727.
- Hinsdale gneiss, Archean, Massachusetts: Emerson, 321.
- Holtsclaw substage, Mississippian, Kentucky: Miller, 727.
- Holyoke diabase, Triassic (or later), Massachusetts: Emerson, 321.
- Homewood sandstone, Pennsylvanian, Ohio: Stout, 1008.
- Homewood sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Homewood substage, Pennsylvanian, Kentucky: Miller, 727.
- Hoopin slate, Cambrian, Massachusetts: Emerson, 321.
- Hoosac schist, Ordovician, Massachusetts: Emerson, 321.
- Horsethief sandstone, Cretaceous, Montana: Stebinger, 984.

- Hubbardston granite, Carboniferous, Massachusetts: Emerson, 321.
- Hull formation, Ordovician, Ontario: Raymond, 833.
- Huron shale, Devonian, Ohio: Rogers, 875.
- Huron shales, Devonian, Ohio: Verwiebe, 1067.
- Hycos quartz porphyry, Ordovician (?), Virginia, North Carolina: Laney, 608.
- Iatan limestone member, Pennsylvanian, Missouri and Kansas: Hinds and Greene, 471.
- Iatan (Kickapoo) limestone, Pennsylvanian, Kansas: Twenhofel, 1044.
- Idaho beds, Pliocene, Idaho: Merriam, 713.
- Idaho Springs formation, pre-Cambrian, Colorado: Bastin and Hill, 53.
- Ilo formation, Cretaceous, Wyoming: Ziegler, 1190.
- Indian Fields stage, Silurian, Kentucky: Miller, 727.
- Iola limestone, Pennsylvanian, Missouri: Hinds and Greene, 471.
- Iowan drift, Pleistocene, Iowa: Alden and Leighton, 10.
- Irasburg conglomerate, Ordovician, Vermont: Richardson, 853.
- Irene conglomerate, Cambrian, British Columbia: Drysdale, 303.
- Iron formation, pre-Cambrian, Ontario: Parsons, 784.
- Jackfork sandstone, Carboniferous, Arkansas: Miser, 737.
- Jackson formation, Eocene, Alabama: Hopkins, 488.
- Jackson formation, Eocene, Louisiana: Matson, 695.
- Jacksonburg limestone, Ordovician, Pennsylvania: Miller, 728.
- Jane Lew sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Jefferson dolomite, Devonian, Montana, Utah, and Wyoming: Tomlinson, 1027.
- Jefferson limestone, Devonian, Montana: Pardee, 780.
- Jefferson City dolomite, Ordovician, Missouri: Buehler, 137.
- Jeffersonville substage, Devonian, Kentucky: Miller, 727.
- Jelm formation, Triassic, Wyoming: Knight, 589.
- Jewell phyllite, Carboniferous, Maine: Katz, 546.
- Joana limestone, Mississippian, Nevada: Spencer, 975.
- Judith River formation, Cretaceous, Montana: Collier, 223; Hares, 424; Thom, 1020.
- Kalbab limestone, Pennsylvanian, Arizona, Utah: Gregory, 402.
- Kanawha black flint, Pennsylvanian, West Virginia: Hennen, 451.
- Kanawha group, Pennsylvanian, West Virginia: Hennen, 451.
- Kansas City formation, Pennsylvanian, Missouri: Hinds and Greene, 471.
- Kaskaskia (Chester) series, Mississippian, Kentucky: Miller, 727.
- Kenwood substage, Mississippian, Kentucky: Miller, 727.
- Keokuk limestone, Mississippian, Illinois: Hinds, 469, 470.
- Keyser limestone member, Devonian, Pennsylvania: Reeside, 841.
- Kimmswick limestone, Ordovician, Illinois and Missouri: Raymond, 833.
- Kingsdown marls, Quaternary, Kansas: Hay, 434.
- Kittanning sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Kittery quartzite, Carboniferous, Maine and New Hampshire: Katz, 546.
- Knapp formation, Devonian, Pennsylvania: Verwiebe, 1067.
- Knife Lake formation, pre-Cambrian, Ontario: Parsons, 784.
- Knife Lake slates, pre-Cambrian, Minnesota: Broderick, 119.
- Knoxville formation, Cretaceous, California: Clark, 197.
- Kona dolomite, Algonkian, Michigan: Smith, 967.
- Kootenai formation, Cretaceous, Montana: Pardee, 780; Stebinger, 984.
- Kootenai (?) formation, Cretaceous, Montana: Collier, 223.
- Kootenay formation, Cretaceous, British Columbia: Rose, 880.
- La Biche formation, Cretaceous, Alberta: McLearn, 676.
- Lafayette substage, Pliocene, Kentucky: Miller, 727.
- LaGrange substage, Eocene, Kentucky: Miller, 727.
- Lake Louisa shale, Cambrian, Alberta: Walcott, 1078.
- Laketown dolomite, Silurian and Devonian, Utah: Tomlinson, 1027.
- Lake Trammel sandstone, Permian, Texas: Wrather, 1174.
- Lake Valley limestone, Mississippian, New Mexico: Darton, 257, 258.
- LaMotte sandstone, Cambrian, Missouri: Buehler, 137.
- Lance formation, Tertiary (?), Montana: Woolsey *et al.*, 1173.
- Lance formation, Tertiary (?), North Dakota: Leonard, 633.
- Lance formation, Tertiary (?), Wyoming: Hewett and Lupton, 461.
- Lance formation, Wyoming: Wegemann, 1109.
- Lane shale, Pennsylvanian, Kansas and Missouri: Hinds and Greene, 471.
- Lansing formation, Pennsylvanian, Missouri and Kansas: Hinds and Greene, 471.
- La Plata group, Jurassic, Arizona, Utah, and New Mexico: Gregory, 402.
- Laurel limestone, Silurian, Ohio and Indiana: Foerste, 350.
- Laurel substage, Silurian, Kentucky: Miller, 727.

- Laurentian gneiss, pre-Cambrian, Quebec: Dresser, 298.
- Lawrence shale member, Pennsylvanian, Missouri and Kansas: Hinds and Greene, 471.
- Lawrence shales, Pennsylvanian, Kansas: Twenhofel, 1044.
- Leadville limestone, Devonian-Mississippian, Colorado: Crawford and Worcester, 238.
- Lebo shale member, Tertiary, Montana: Woolsey *et al.*, 1173.
- Lee quartz diorite, Archean, Massachusetts: Emerson, 321.
- Leech River formation, Carboniferous (?), British Columbia: Clapp, 193.
- Leigh formation, Ordovician, Utah: Tomlinson, 1027.
- Leithsville shaly limestone, Cambrian, Pennsylvania: Miller, 728.
- Lennep sandstone, Cretaceous, Montana: Thom, 1020.
- Leona rhyolite, Pliocene (?), California: Clark, 197.
- Le Roy shales, Pennsylvanian, Kansas: Twenhofel, 1044.
- Lewis shale, Cretaceous, Wyoming: Hares, 424.
- Lexington limestone, Ordovician, Kentucky: Shaw, 932.
- Lexington stage, Ordovician, Kentucky: Miller, 727.
- Leyden argillite, Silurian (?), Massachusetts: Emerson, 321.
- Liberty substage, Ordovician, Kentucky: Miller, 727.
- Lilley member, Silurian, Ohio: Foerste, 350.
- Linden shale and limestone, Devonian, Tennessee: Dunbar, 306.
- Lisbon formation, Eocene, Alabama: Hopkins, 488.
- L'Islet formation, Cambrian, Quebec: Knox, 596.
- Lobo formation, Triassic(?), New Mexico: Darton, 257.
- Logan formation, Mississippian, Ohio: Stout, 1008.
- Logan sills, pre-Cambrian, Minnesota: Broderick, 119.
- Long Lake series, Devonian, Michigan: Smith, 967.
- Longmeadow sandstone, Triassic, Massachusetts: Emerson, 321.
- Lorette formation, Ordovician, New York: Raymond, 833.
- Lorrain quartzite, Cambrian, Ontario: Collins, 224.
- Louisville substage, Silurian, Kentucky: Miller, 727.
- Lowville limestone, Ordovician, New York, Coryell, 237.
- Lueders limestone, Permian, Texas: Wrather, 1174.
- Lulbegrud substage, Silurian, Kentucky: Miller, 727.
- McBean formation, Tertiary, Georgia: Shearer, 936.
- McElmo formation, Jurassic(?), New Mexico, Arizona, and Utah: Gregory, 402.
- Mackworth slate, Carboniferous, Maine: Katz, 546.
- McLeansboro formation, Pennsylvanian, Illinois: Cady, 151.
- McMurray formation, Cretaceous, Alberta: McLearn, 676.
- McNairy sand member, Cretaceous, Tennessee: Wade, 1072.
- Madison limestone, Carboniferous, Montana: Collier, 223.
- Madison limestone, Carboniferous, Wyoming: Hewett and Lupton, 461.
- Madison limestone, Mississippian, Montana: Pardee, 780.
- Madison limestone, Mississippian, Montana and Utah: Tomlinson, 1027.
- Magothy formation, Cretaceous, Maryland: Miller *et al.*, 730.
- Mahoning sandstone, Pennsylvania, Ohio: Stout, 1008.
- Mahoning (Middle) sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Mahoning (Lower) sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Mahoning (Upper) sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Malahat volcanics, Carboniferous(?), British Columbia: Clapp, 193.
- Mammoth Cave series, Mississippian, Kentucky: Miller, 727.
- Mancos shale, Cretaceous, New Mexico, Arizona, and Utah: Gregory, 402.
- Manigotagan granite, pre-Cambrian, Manitoba: Dresser, 299.
- Manistique series, Silurian, Michigan: Smith, 967.
- Mannington sandstone, Permo-Carboniferous, West Virginia: Hennen, 451.
- Marianna limestone, Oligocene, Alabama: Hopkins, 488.
- Marianna limestone, Tertiary, Florida: Cooke, 232.
- Mariposa formation, Jurassic, California: Moody, 742.
- Marlboro formation, Algonkian(?), Massachusetts and Rhode Island: Emerson, 321.
- Martinez formation, Tertiary, California: Waring, 1088.
- Martinsburg shale, Ordovician, Pennsylvania: Raymond, 833.
- Martinsburg shale, Ordovician, Pennsylvania: Miller, 728.
- Matawan formation, Cretaceous, Maryland: Miller *et al.*, 730.
- Mattapan volcanic complex, Carboniferous, Massachusetts: Emerson, 321.
- Maxfield formation, Cambrian, Utah: Tomlinson, 1027.
- Maxville limestone, Mississippian, Ohio: Stout, 1008.

- Maxville(?) limestone, Mississippian, Kentucky: Shaw, 932.
- Maysville formation, Ordovician, Kentucky: Shaw, 932.
- Maywood formation, Silurian(?), Montana: Pardee, 780.
- Mazarn shale, Ordovician, Arkansas: Miser, 737.
- Meade gravels, Quaternary, Kansas: Hay, 434.
- Meadville formation, Mississippian, Pennsylvania: Verwiebe, 1066.
- Meagher limestone, Cambrian, Montana: Walcott, 1079.
- "Medina" shale, Silurian, Ohio: Rogers, 875.
- Meeteetse formation, Cretaceous, Wyoming: Hewett and Lupton, 461; Ziegler, 1190.
- Meeteetse member, Cretaceous, Wyoming: Ziegler, 1189.
- Menard formation, Mississippian, Illinois: St. Clair, 886.
- Menard substage, Mississippian, Kentucky: Miller, 727.
- Mercer (Lower) limestone, Pennsylvanian, Ohio: Stout, 1008.
- Mercer (Upper) limestone, Pennsylvanian, Ohio: Stout, 1008.
- Merkel dolomite, Permian, Texas: Wrather, 1174.
- Merrimack quartzite, Carboniferous, Massachusetts: Emerson, 321.
- Mesaverde formation, Cretaceous, New Mexico and Arizona: Gregory, 402.
- Mesaverde formation, Cretaceous, Wyoming: Hares, 424; Ziegler, 1189, 1190.
- Mesaverde formation, Cretaceous(?), Wyoming: Hewett and Lupton, 461.
- Metchozin volcanics, Eocene, British Columbia: Clapp, 193.
- Middlefield granite, Carboniferous (or later), Massachusetts: Emerson, 321.
- Midway formation, Eocene, Louisiana: Matson, 695.
- Midway formation, Eocene, Louisiana: Matson and Hopkins, 696.
- Midway formation, Tertiary, Georgia: Shearer, 936.
- Midway formation, Tertiary, Texas: Matson and Hopkins, 697.
- Midway formation, Tertiary (Eocene), Texas: Hopkins, 486.
- Milford granite, Devonian(?), Massachusetts: Emerson, 321.
- Milk River sandstone, Cretaceous, Alberta: Dowling, 296.
- Million substage, Ordovician, Kentucky: Miller, 727.
- Mississagi quartzite, pre-Cambrian, Ontario: Quirke, 827.
- Missouri Mountain slate, Silurian, Arkansas: Miser, 737.
- Moccasin limestone, Ordovician, Virginia: Raymond, 833.
- Moenkopi formation, Carboniferous (Permian?), Arizona and Utah: Gregory, 402.
- Monmouth formation, Cretaceous, Maryland: Miller *et al.*, 730.
- Monongahela series, Pennsylvanian, West Virginia: Hennen, 451.
- Monroe formation, Silurian, Ohio: Rogers, 875.
- Monroe group, Silurian, Michigan: Sherzer, 917.
- Monroe (Lower) series, Silurian, Michigan: Smith, 967.
- Monson granodiorite, Carboniferous (or later), Massachusetts: Emerson, 321.
- Montana group, Cretaceous, Montana: Stebinger, 984.
- Monterey formation, Miocene, California: Smith, 962.
- Monterey shale, Cretaceous, California: Hawley, 431.
- Montoya limestone, Ordovician, New Mexico: Darton, 257, 258.
- Mooreville tongue of Selma chalk, Cretaceous, Mississippi: Stephenson, 989.
- Morgantown sandstone, Pennsylvanian, West Virginia: Hennen, 451.
- Morrison formation, Cretaceous: Schuchert, 912.
- Morrison formation, Cretaceous, Colorado: Lee, 625.
- Morrison formation, Cretaceous, Wyoming: Ziegler, 1189, 1190.
- Morrison formation, Cretaceous(?), Wyoming: Hewett and Lupton, 461.
- Morse Creek limestone, Devonian, New York: Grabau, 393.
- Mount Auburn substage, Ordovician, Kentucky: Miller, 727.
- Mount Clemens moraine, Quaternary, Michigan: Sherzer, 917.
- Mount Hope substage, Ordovician, Kentucky: Miller, 727.
- Mount Roberts formation, Carboniferous, British Columbia: Bruce, 132.
- Mount Selman formation, Tertiary (Eocene), Texas: Hopkins, 486.
- Mount Toby conglomerate, Triassic, Massachusetts: Emerson, 321.
- Mount Whyte formation, Cambrian, British Columbia: Walcott, 1079.
- Mount Whyte formation, Cambrian, British Columbia and Alberta: Walcott, 1080.
- Mowry formation, Cretaceous, Wyoming: Ziegler, 1189.
- Mowry shale, Cretaceous, Montana: Collier, 223.
- Mowry shale, Cretaceous, Wyoming: Hares, 424; Ziegler, 1190.
- Mowry shale, Cretaceous(?), Wyoming: Hewett and Lupton, 461.
- Murfreesboro stage, Miocene, Virginia and North Carolina: Olsson, 764.
- Nacatoch sand, Cretaceous, Louisiana: Matson and Hopkins, 696.
- Nainaimo series, Cretaceous, British Columbia: Clapp, 193.
- Navajo sandstone, Jurassic, New Mexico, Arizona, Utah: Gregory, 402.

- Navarro formation, Cretaceous, Texas: Hopkins, 486; Matson and Hopkins, 697.
 Nazareth cement limestone, Ordovician, Pennsylvania: Miller, 728.
 Nelson granodiorite, Jurassic, British Columbia: Bruce, 132.
 Nenana gravel, Tertiary (?), Alaska: Capps, 174.
 Nevada limestone, Devonian, Nevada: Spencer, 975.
 Newark group, Triassic, Massachusetts: Emerson, 321.
 Newark sandstone, Triassic, Virginia: Laney, 608.
 Newbury volcanic complex, Silurian or Devonian, Massachusetts: Emerson, 321.
 Newburyport quartz diorite, Devonian (?), Massachusetts: Emerson, 321.
 Newington moraine, Pleistocene, Maine, New Hampshire, and Massachusetts: Katz and Keith, 547.
 Newman series, Mississippian, Kentucky: Miller, 727.
 New Providence substage, Mississippian, Kentucky: Miller, 727.
 New Salem aplite, Carboniferous (or later), Massachusetts: Emerson, 321.
 New Scotland limestone, Devonian, Pennsylvania: Reeside, 841.
 Niagara limestone, Silurian, Michigan: Smith, 967.
 Niagara limestone, Silurian, Ohio: Rogers, 875.
 Niobrara formation, Cretaceous, North Dakota: Leonard, 633.
 Niobrara shale, Cretaceous, Wyoming: Hares, 424.
 Nisconlith series, pre-Cambrian, British Columbia: Drysdale, 303.
 Normanskill shale, Ordovician, New York: Raymond, 833.
 Northbridge granite gneiss, Archean, Massachusetts: Emerson, 321.
 Northumberland formation, Cretaceous, British Columbia: Clapp, 193.
 Oakland conglomerate, Cretaceous, California: Clark, 197.
 Oakdale quartzite, Carboniferous, Massachusetts: Emerson, 321.
 Oatka beds, Silurian, New York: Chadwick, 183.
 Ocala limestone, Eocene, Florida: Cooke, 232.
 Ocala limestone, Tertiary, Georgia: Shearer, 936.
 Ogden quartzite, Ordovician, Utah: Tomlinson, 1027.
 Ogdensburg formation, Ordovician, New York, Cushing, 245.
 Ogishke conglomerate, pre-Cambrian, Minnesota: Broderick, 119.
 O'Hara substage, Mississippian, Kentucky: Miller, 727.
 Ohio formation, Devonian, Ohio: Stout, 1008.
 Ohio shale, Devonian, Kentucky: Shaw, 932.
 Ohio shale, Devonian, Ohio: Verwiebe, 1067.
 Ohio shale group, Devonian, Ohio: Rogers, 875.
 Ohio substage, Devonian, Kentucky: Miller, 727.
 Oktibbeha tongue of Selma chalk, Cretaceous, Mississippi: Stephenson, 989.
 Oldham substage, Silurian, Kentucky: Miller, 727.
 Olentangy shale, Devonian, Ohio: Grabau, 393; Verwiebe, 1067.
 Olentangy (?) shale, Devonian, Ohio: Rogers, 875.
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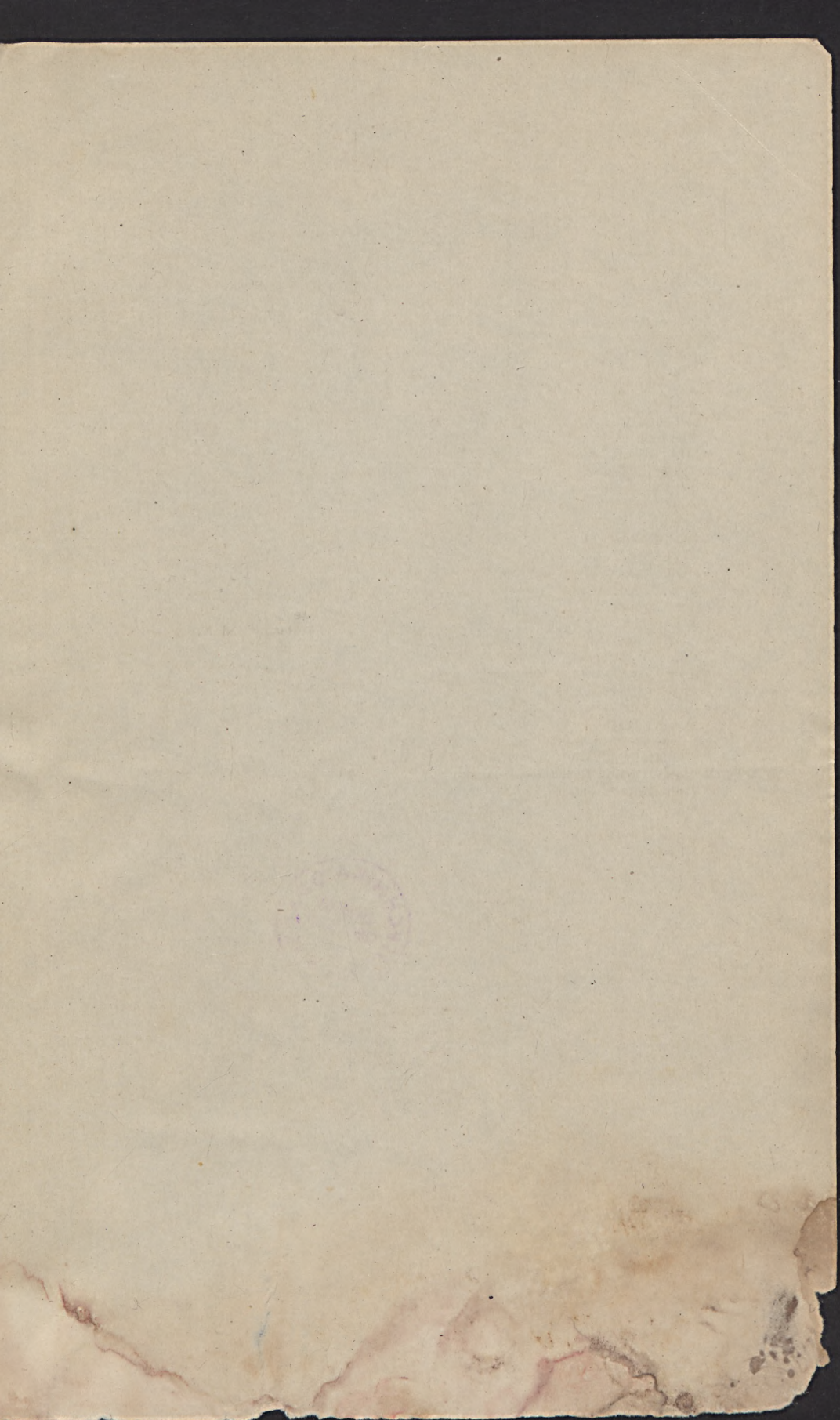
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